**USE OF BIOINFORMATICS IN DEVELOPMENT OF PEPTIDE VACCINE.**

KOLASKAR A.S., URMILA KULKARNI-KALE, GORE M.M.1

Bioinformatics Centre, University of Pune, PUNE 411 007, India;

1National Institute of Virology, PUNE 411 001, India

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Traditional vaccines particularly against viruses have limitations such as difficulty in ascertaining complete loss of pathogenic potential, needof multiple dosages immunity is for short period and higher cost. Amongnew approaches recommended recombinant DNA vaccines and peptide vaccines have high potential and are being tried in several laboratories. As a case study peptide vaccines against Japanese encephalitis (JE) virus is being developed. The method used include multiple alignment of sequencesof envelop glyco protein (Egp) of Flavi viruses those are closely relatedto JE virus such as MVE virus, WN Virus, Kun Virus, Den Virus, and YF Virus. Using in house algorithms the antigen program is developed. This program is used to predict antigenic determinants of each of these proteins. One of the consensus determinant 155-163 was synthesized in laboratory and polyclonal antibodies are raised against the peptide. This antigenic determinant 155-166 was proven to be not only antigenic but also virus neutralizing epitope. Molecular modeling studies are carried out and the stable conformation was predicted by adding flanking peptides to N-terminal and C-terminal regions. These molecular modeling studies are carried on 149-163, 151-163, 155-163, 155-167, 149-167 and 157-167 peptides. The conformationally stable peptide was attached to previously predicted T-helper cell binding peptide. It's immune protecting capacity is also checked in laboratory to confirm that peptide can be used as potential vaccine. Further knowledge based homology. Modeling studies are carried out to predict 3-D structure of the Egp of JE virus. The template used is the structure of Egp of TBE virus. Conformational epitopes are predicted using this model of the Egp. Thus it has been showed that, the use of Bioinformatics tools and techniques not only reduces the time required to identify the candidate peptide as vaccine but also provides an insight in structure function relationship of virus protein.